CLAIMS

1. A method of cultivating multipotent stem cells comprising:

(a) cultivating multipotent stem cells while suppressing differentiation of said multipotent stem cells sealed in a first cultivating container; and

(b) cultivating said cultivated multipotent stem cells while applying a force to said cultivated multipotent stem cells sealed in a second cultivating container and inducing differentiation of said cultivated multipotent stem cells.

2. The method of cultivating multipotent stem cells according to claim 1, wherein said (a) cultivating comprises:

dispersing a direction of application of gravitation to said multipotent stem cells three-dimensionally to suppress said differentiation.

3. The method of cultivating multipotent stem cells according to claim 2, wherein said (a) cultivating comprises:

carrying out an n-axis rotation (n is an integer of 2 or more) on the multipotent stem cells to disperse the direction of application of the gravitation to said multipotent stem cells three-dimensionally.

4. The method of cultivating multipotent stem cells according to claim 3, wherein said n is 2, and one axis is a direction of the gravitation, and the other axis is orthogonal to the direction of the gravitation.

5. The method of cultivating multipotent stem cells according to any of claims 1 to 4, wherein a direction of said force is different from the direction of the gravitation.

6. The method of cultivating multipotent stem cells according to claim 5, wherein said force is greater than a magnitude of the gravitation.

7. The method of cultivating multipotent stem cells according to claim 6, wherein said force is a resultant force of the gravitation and a centrifugal force.

8. The method of cultivating multipotent stem cells according to any of claims 1 to 7, wherein a differentiation inducing agent is mixed in the medium in the second cultivating container.

9. The method of cultivating multipotent stem cells according to any of claims 1 to 8, wherein

said (a) cultivating and said (b) cultivating step are carried out in a same apparatus.

10. The method of cultivating multipotent stem cells according to any of claims 1 to 9, wherein said first cultivating container and said second cultivating container are same.

11. A cultivating apparatus of multipotent stem cells comprising:

an inner frame to which a cultivating container accommodating multipotent stem cells is attached;

an outer frame configured to rotatably support said inner frame;

a first motor configured to rotate said inner frame around a first rotation axis;

a supporting section configured to rotatably support said outer frame; and

a second motor configured to rotating said outer frame around a second rotation axis.

12. The cultivating apparatus according to claim 11, wherein said second rotation axis is in a direction of gravitation.

13. The cultivating apparatus according to claim

12, wherein said first rotation axis is in a direction orthogonal to said second rotation axis.

14. The cultivating apparatus according to any of claims 11 to 13, wherein said second motor can be operated independently of said first motor.

15. The cultivating apparatus according to claim 14, wherein said inner frame can be fixed to a predetermined rotation position.

16. The cultivating apparatus according to any of claims 11 to 15, wherein said cultivating container is attached to said inner frame in a vicinity of a crossing point between said first rotation axis and said second rotation axis.

17. The cultivating apparatus according to claim 16, wherein when said multipotent stem cells are cultivated while said differentiation of said multipotent stem cells is suppressed, said cultivating container is attached to said inner frame in the vicinity of the crossing point between said first rotation axis and said second rotation axis, and when the differentiation of said multipotent stem cells are induced, said cultivating container is attached to an end portion of said inner frame.

18. The cultivating apparatus according to any of claims 11 to 15, wherein when said cultivating container is attached to an end portion of said inner frame.

19. A cultivating system of multipotent stem cells comprising:

first means for cultivating multipotent stem cells while suppressing differentiation of said multipotent stem cells sealed in a first cultivating container; and

second means for cultivating the cultivated multipotent stem cells while applying a force to the cultivated multipotent stem cells sealed in a second cultivating container to promote the differentiation of the multipotent stem cells.

20. The cultivating system of multipotent stem cells according to claim 19, wherein said first means disperses a direction of application of gravitation to said multipotent stem cells three-dimensionally to suppress the differentiation.

21. The cultivating system of multipotent stem cells according to claim 20, wherein said first means carries out an n-axis rotation (n is an integer of 2 or more) on said multipotent stem cells to disperse

the direction of application of the gravitation to said multipotent stem cells three-dimensionally.

22. The cultivating system of multipotent stem cells according to claim 21, wherein said n is 2, and one axis is a direction of the gravitation, and the other axis is orthogonal to a direction of the gravitation.

23. The cultivating system of multipotent stem cells according to any of claims 19 to 22, wherein the direction of said force is different from the direction of the gravitation.

24. The cultivating system of multipotent stem cells according to claim 23, wherein said force is greater than a magnitude of the gravitation.

25. The cultivating system of multipotent stem cells according to claim 24, wherein said force is a resultant force of the gravitation and centrifugal force.

26. The cultivating system of multipotent stem cells according to any of claims 19 to 25, wherein a differentiation inducing agent is mixed in a medium in said second cultivating container.

27. The cultivating system of multipotent stem cells according to any of claims 19 to 26, wherein said first cultivating container and said second cultivating container are same.